

# PATENT COOPERATION TREATY

PCT/DE2004/000748

From the INTERNATIONAL BUREAU

## PCT

NOTIFICATION OF TRANSMITTAL  
OF COPIES OF TRANSLATION  
OF THE INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY  
(CHAPTER I OR CHAPTER II  
OF THE PATENT COOPERATION TREATY)  
(PCT Rules 44bis.3(c) and 72.2)

To:

GEMEINSAMER PATENTSERVICE  
Hausvogteiplatz 5-7  
10117 Berlin  
ALLEMAGNE

Date of mailing (day/month/year)  
09 March 2006 (09.03.2006)

Applicant's or agent's file reference  
HMI2003/0401

### IMPORTANT NOTIFICATION

International application No.  
PCT/DE2004/000748

International filing date (day/month/year)  
07 April 2004 (07.04.2004)

Applicant

HAHN-MEITNER-INSTITUT BERLIN GMBH et al

#### 1. Transmittal of the translation to the applicant.



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

#### 2. Transmittal of the copy of the translation to the designated or elected Offices.

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

None

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EA, EC, EE, EG, EP, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

#### 3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.

The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer

Ellen Moyse

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

|  |   |   |
|--|---|---|
| Applicant's or agent's file reference<br>HMI2003/0401  | <b>FOR FURTHER ACTION</b>   | See item 4 below  |
| International application No.<br>PCT/DE2004/000748   | International filing date ( <i>day/month/year</i> )<br>07 April 2004 (07.04.2004) | Priority date ( <i>day/month/year</i> )<br>15 April 2003 (15.04.2003) |
| International Patent Classification (8th edition unless older edition indicated)<br>See relevant information in Form PCT/ISA/237 |   |   |
| Applicant<br>HAHN-MEITNER-INSTITUT BERLIN GMBH   |   |   |

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).

2. This REPORT consists of a total of 8 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- |                                     |              |   |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I    | Basis of the report   |
| <input checked="" type="checkbox"/> | Box No. II   | Priority  |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |
| <input checked="" type="checkbox"/> | Box No. V    | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |
| <input type="checkbox"/>            | Box No. VIII | Certain observations on the international application   |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

|   |   |   |                                       |                                |
|---|---|---|---------------------------------------|--------------------------------|
| The International Bureau of WIPO<br>34, chemin des Colombettes<br>1211 Geneva 20, Switzerland<br><br>Facsimile No. +41 22 740 14 35 | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">Date of issuance of this report<br/>02 March 2006 (02.03.2006)</td> </tr> <tr> <td style="padding: 5px;">Authorized officer<br/><br/>Ellen Moyse</td> </tr> <tr> <td style="padding: 5px;">Telephone No. +41 22 338 89 75</td> </tr> </table> | Date of issuance of this report<br>02 March 2006 (02.03.2006) | Authorized officer<br><br>Ellen Moyse | Telephone No. +41 22 338 89 75 |
| Date of issuance of this report<br>02 March 2006 (02.03.2006)   |   |   |                                       |                                |
| Authorized officer<br><br>Ellen Moyse   |   |   |                                       |                                |
| Telephone No. +41 22 338 89 75  |   |   |                                       |                                |

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

**Translation**

## PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

To:

Date of mailing  
(day/month/year)

Applicant's or agent's file reference  
**HMI2003/0401**

**FOR FURTHER ACTION**

See paragraph 2 below

International application No.  
**PCT/DE2004/000748**

International filing date (day/month/year)  
**07.04.2004**

Priority date (day/month/year)  
**15.04.2003**

International Patent Classification (IPC) or both national classification and IPC  
**C23C16/44, C23C16/04**

Applicant  
**HAHN-MEITNER-INSTITUT BERLIN GMBH**

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP

Authorized officer

Facsimile No.

Telephone No.

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/DE2004/000748

Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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Box No. II

Priority

1. ☒ The following document has not yet been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date in the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

1. Statement

|                               |        |           |     |
|-------------------------------|--------|-----------|-----|
| Novelty (N)                   | Claims | 1-5       | YES |
|                               | Claims | 7-10      | NO  |
| Inventive step (IS)           | Claims | 6         | YES |
|                               | Claims | 1-5, 7-10 | NO  |
| Industrial applicability (IA) | Claims | 1-10      | YES |
|                               | Claims |           | NO  |

2. Citations and explanations:

1 The present report makes reference to the following documents:

D1: PATENT ABSTRACTS OF JAPAN, vol. 0181, no. 20  
(E-1516), 25 February 1994 & JP 5 315645 A

D2: US-A-5 789 766

D3: MARCHI F ET AL: "Direct patterning of noble  
nanostructures with a scanning tunnelling  
microscope" JOURNAL OF VACUUM SCIENCE &  
TECHNOLOGY B 18(3), May 2000 (2000-05), pages  
1171-1176

D4: WO 02/084729 A

2 INDEPENDENT CLAIM 7

2.1 The present application does not satisfy the  
requirements of PCT Article 33(1) because the  
subject matter of claim 7 is not novel within the  
meaning of PCT Article 33(2).

Document D1 discloses a semiconductor element,  
characterized by a design as a light-absorbing or  
light-emitting LED and as an array thereof (D1:  
abstract PAJ, figures 1-6). Despite a different  
manufacturing process, the semiconductor element

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

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Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

disclosed in D1 is said to exhibit the same  
properties.

- 2.2 The present application does not satisfy the requirements of PCT Article 33(1) because the subject matter of claim 7 is not novel within the meaning of PCT Article 33(2).

Document D2 discloses semiconductor elements, characterized by a design as a light-emitting LED and as an array thereof (D1: claims 1-7, figures 1-3).

3 INDEPENDENT CLAIM 1

- 3.1 The present application does not satisfy the requirements of PCT Article 33(1) because the subject matter of claim 1 is not based on an inventive step within the meaning of PCT Article 33(3).

- 3.1 Document D3 is considered to be the closest prior art in respect of the subject matter of claim 1. It discloses an electrochemical method for the direct nanostructured deposition of material onto a substrate, by depositing at least one material component from a pressure- and temperature-controlled atmosphere using a precursor gas containing at least one material component in a precursor compound, under the effect of a locally narrowly limited electric field which is built up in a voltage- and time-dependent manner between the movable electrically conductive probe tip of a contactlessly scanning microscope and the

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/DE2004/000748

Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

~~substrate, wherein the precursor compound is split~~

above a predefined threshold voltage value and the released material component is deposited on the substrate in the region of the probe tip, characterized in that use is made of a precursor gas (D3: page 1171 column 2 line 8 - page 1175 column 2 line 12, figure 1, table 1).

3.2 The subject matter of claim 1 thus differs from that known from D1 in that, a number of precursor gases in a gas mixture are used for the electrochemical method for nanostructuring on a substrate.

3.3 The problem to be solved by the present invention can thus be considered to be that the chemical method permits the production of compound conductors under vacuum.

3.4 The solution proposed in claim 1 of the present application cannot be considered to be inventive for the following reasons (PCT Article 33(3)): the production of compound conductors by means of a chemical method under vacuum and using a number of precursor gases is already known (D4: page 5 line 11 - page 6 line 26 and claims 1, 2).

3.5 The person skilled in the art would therefore combine all the features disclosed in D3 and D4, without thereby being inventive, to solve the problem of interest. The solution proposed in the independent claim 1 therefore cannot be considered

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/DE2004/000748

Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability:  
citations and explanations supporting such statement

to be inventive (PCT Article 33(3)).

4 DEPENDENT CLAIMS 2-5, 8-10

Claims 2-5, 8-10 do not contain any features which, in combination with the features of any claim to which they refer back, satisfy the requirements of the PCT in respect of novelty and inventive step.